

# INTERFERENCE DIGEST

Interference No. 103,685 Paper No. 20  
 Name, Phillip H. Riggins et al.  
 Serial No. 08/206,405 Patent No. \_\_\_\_\_  
 Title, DYE DIFFUSION PROMOTING AGENTS FOR ARAMIDS  
 Filed, 03/07/94  
 Interference with Holsten et al. v. Holsten et al.

## DECISION ON MOTIONS

Examiner-in-Chief, \_\_\_\_\_ Dated, \_\_\_\_\_  
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## FINAL DECISION

Board of Patent Appeals and Interferences, Nov. 27 2001 Dated, \_\_\_\_\_  
Judgment Favorable  
 Court, \_\_\_\_\_ Dated, \_\_\_\_\_

## REMARKS

Relec. Sub. 2 for CT. 1 6/6/97  
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This should be placed in each application or patent involved in interference in addition to the interference letters.

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

PHILLIP H. RIGGINS and JOHN H. HANSEN,  
Junior Party,

v.

JOHN R. HOLSTEN and NIGEL E. NEELY,  
Senior Party.

Interference 103,685

Final Hearing: October 15, 2001

Before McKELVEY, Senior Administrative Patent Judge, and  
GRON, and MEDLEY, Administrative Patent Judges.

GRON, Administrative Patent Judge.

FINAL DECISION

1. Background

September 28, 1990 - JOHN R. HOLSTEN and NIGEL E. NEELY  
(hereafter **Holsten**) filed U.S. Application 07/589,919, entitled

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PAT. & T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

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"Method For Dyeing Fibrous Materials" (hereafter **Holsten's parent application**).

October 31, 1990 - PHILLIP H. RIGGINS and JOHN H. HANSEN (hereafter **Riggins**) filed U.S. Application 07/606,572, entitled "Dye Diffusion Promoting Agents For Aramids" (hereafter **Riggins' grandparent application**).

March 16, 1992 - Riggins filed U.S. Application 07/851,781, entitled "Dye Diffusion Promoting Agents For Aramids" (hereafter **Riggins' parent application**), which is said to be a continuation-in-part of Riggins' grandparent application filed October 31, 1990, abandoned.

March 3, 1993 - Holsten filed U.S. Application 08/025,979, entitled "Method For Dyeing Fibrous Material" (hereafter **Holsten's involved application**), which is said to be a continuation-in-part of Holsten's parent application filed September 28, 1990.

May 4, 1993 - Holsten et al., U.S. Patent 5,207,803, entitled "Method For Dyeing Aromatic Polyamide Fibrous Materials: N,N-Diethyl (Meta-Toluamide) Dye Carrier" (hereafter **Holsten's patent**), issued from Holsten's parent application filed September 28, 1990.

March 7, 1994 - Riggins filed U.S. Application 08/206,405, entitled "Dye Diffusion Promoting Agents for Aramids" (hereafter

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Riggins' involved application), which is said to be a divisional of Riggins' parent application filed March 16, 1992, which is said to be a continuation-in-part of Riggins' grandparent application filed October 31, 1990, abandoned.

April 26, 1994 - Riggins et al., U.S. Patent 5,306,312, entitled "Dye Diffusion Promoting Agents For Aramids" (hereafter Riggins' patent), issued from Riggins' parent application filed March 16, 1992, which is said to be a continuation-in-part of Riggins' grandparent application filed October 31, 1990.<sup>1</sup>

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<sup>1</sup> Representative Claims 30 and 64 of Riggins' patent read:

30. A process of dyeing poly(m-phenyleneisophthalamide) fabric comprising:
  - (a) applying to a poly(m-phenyleneisophthalamide) textile fabric a solution containing a tinctorial amount of at least one dye and a dye-diffusion promoting amount of an aliphatic amide having 7 to 14 carbon atoms capable of increasing the swelling ratio of the fabric at least 1.5% and excluding N-octyl-2-pyrrolidone and N-cyclohexyl-2-pyrrolidone, then
  - (b) heating the fabric while in contact with the solution until the desired degree of dyeing is attained.
64. Poly(m-phenyleneisophthalamide) fibers or fabric having from 10% to 120% by weight of an aliphatic amide having 7 to 14 carbon atoms capable of increasing the swelling ratio at least 1.5% and excluding N-octyl-2-pyrrolidone and N-cyclohexyl-2-pyrrolidone to make the fibers or fabric receptive to dyeing, printing or flame retardant treating.

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June 11, 1996 - Interference 103,685 was declared  
essentially as follows (Paper No. 1):

JUNIOR PARTY

Named Inventors: Phillip H. Riggins and John H. Hansen

Application: Application 08/206,405, filed  
March 7, 1994

Title: Dye Diffusion Promoting Agents For  
Aramids

Assignee: None

Accorded benefit  
for the purpose of  
priority of: Application 07/851,781, filed March 16,  
1992, now U.S. Patent 5,306,312, granted  
April 26, 1994; Application 07/606,572,  
filed October 31, 1990

SENIOR PARTY APPLICATION

Named Inventors: John R. Holsten and Nigel E. Neely

Application: Application 08/025,979, filed March 3,  
1993

Title: Method For Dyeing Fibrous Material

Assignee: Springs Industries

Accorded Benefit  
for the purpose of  
priority of: Application 07/589,919, filed  
September 28, 1990, now U.S. Patent  
5,207,803, granted May 4, 1993

SENIOR PARTY PATENT

Named Inventors: John R. Holsten and Nigel E. Neely

Patent: U.S. Patent 5,207,803, granted May 4,  
1993

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Title: Method For Dyeing Aromatic Polyamide  
Fibrous Materials: N,N-diethyl(meta-  
toluamide) Dye Carrier

Assignee: Springs Industries

Accorded Benefit: None

Count 1

The process of claim 1 of the Riggins et al.  
application,

or

the process of claim 9 of the Riggins et al.  
application,

or

the process of claim 13 of the Riggins et al.  
application,

or

the method of claim 65 of the Riggins et al.  
application,

or

the fibrous material or fiber of claim 66 of the  
Riggins et al. application,

or

the method of claim 67 of the Riggins et al.  
application,

or

the fibrous material or fiber of claim 68 of the  
Riggins et al. application,

or

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the method of claim 1 of the Holsten et al.  
application,

or

the fabric of claim 12 of the Holsten et al.  
application,

or

the method of claim 15 of the Holsten et al.  
application,

or

the fabric of claim 23 of the Holsten et al.  
application,

or

the method of claim 24 of the Holsten et al.  
application,

or

the method of claim 35 of the Holsten et al.  
application,

or

the fibrous material of claim 43 of the Holsten et al.  
application,

or

the fabric of claim 52 of the Holsten et al.  
application,

or

the method of claim 1 of the Holsten et al. patent,

or

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the fabric of claim 9 of the Holsten et al. patent,

or

the method of claim 10 of the Holsten et al. patent,

or

the fabric of claim 14 of the Holsten et al. patent,

or

the method of claim 15 of the Holsten et al. patent,

or

the method of claim 21 of the Holsten et al. patent,

or

the fibrous material of claim 25 of the Holsten et al. patent,

or

the fabric of claim 29 of the Holsten et al. patent,

or

the fiber of claim 30 of the Holsten et al. patent,

or

the fabric of claim 34 of the Holsten et al. patent,

or

the method of claim 35 of the Holsten et al. patent.

Junior party Riggins' claims which were designated as corresponding to the Count 1 at the time the interference was declared and are deemed to be representative of Riggins' claimed



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invention are (Paper No. 1 (Notice Declaring Interference),  
pp. 15-16):

Riggins' Claim 1

A process of dyeing poly(m-phenyleneisophthalamide) fabric comprising:

(a) dyeing the fabric at a temperature in the range of about 100°C to about 150°C and elevated pressure in a fiber-dyeing solution containing a tinctorial amount of at least one dye and a dye diffusion promoting amount of an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value of the fabric at least 1.5% then

(b) heating the fabric while in contact with the solution until the desired degree of dyeing is attained.

Riggins' Claim 13

A process of flame-retardant treating poly(m-phenyleneisophthalamide) fabric comprising:

(a) treating the fabric with flame retardant at a temperature in the range of about 100°C to about 150°C and elevated pressure in a fiber-treating solution containing a flame-retarding amount of at least one flame retardant and a flame retardant diffusion promoting amount of an amide having 7 to 14 carbon atoms capable of increasing the swelling value of the fabric at least 1.5% then

(b) heating the fabric while in contact with the solution until the desired degree of flame retardant fixation is attained.

Riggins' Claim 66

A fibrous material or fiber of an aromatic polyamide that has been dyed with a dyebath comprising a mixture of a dye diffusion promoting agent and a dye soluble or dispersed with said agent, said agent comprising an aromatic amide having 7 to 14 carbon atoms.

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Senior party Holsten's application claims which were designated as corresponding to the Count 1 at the time the interference was declared and are deemed to be representative of Holsten's claimed invention are (Paper No. 1 (Notice Declaring Interference), pp. 17-18):

Holsten's application Claim 1

A method for dyeing fibrous material comprising the steps of:

contacting a fibrous material formed from fibers selected from the group consisting of aromatic polyamide fibers, polybenzimidazole fibers, aromatic polyimide fibers, fibers of copolymers of the monomers thereof, or blends thereof with a dyebath comprising a mixture of a carrier and a dye soluble or dispersed in the dyebath, the carrier comprising an N-substituted aromatic carbonamide or an N,N-disubstituted aromatic carbonamide or mixture thereof; and

heating the fiber while in contact with the dyebath to fix said dye within the fibrous material.

Holsten's application Claim 3

A method according to Claim 1 wherein the carrier includes an emulsifier.

Holsten's application Claim 5

A method according to Claim 1 or 3 wherein the carrier includes a flame retardant.

Holsten's application Claim 12

A fabric formed from the fibrous material dyed by the method of Claim 1 or 3.

Holsten's application Claim 43

A fibrous material formed from fibers selected from the group consisting of aromatic polyamide fibers, polybenzimidazole fibers, aromatic polyimide fibers, fibers of copolymers of the monomers thereof, or blends thereof which has been dyed with a mixture of a carrier and a dye soluble or dispersed in a dyebath, the carrier comprising an N-substituted aromatic carbonamide or an N,N-disubstituted aromatic carbonamide or mixture thereof.

Senior party Holsten's patent claims which were designated as corresponding to the Count 1 at the time the interference was declared and are deemed to be representative of Holsten's claimed invention are (Paper No. 1 (Notice Declaring Interference), pp. 18-19):

Holsten's patent Claim 1

A method for dyeing fibrous material comprising the steps of:

contacting a fibrous material formed from fibers selected from the group consisting of aromatic polyamide fibers, polybenzimidazole fibers, aromatic polyimide fibers, fibers of copolymers of the monomers thereof, or blends thereof with a dyebath comprising a mixture of a carrier and a dye soluble or dispersed in the dyebath, the carrier comprising N,N-diethyl(m-toluamide); and

heating the fiber while in contact with the dyebath to fix said dye within the fibrous material.

Holsten's patent Claim 4

A method according to claims [sic] 1 or 2 wherein the mixture includes a flame retardant.

Holsten's patent Claim 30

A fiber selected of aromatic polyamides, polybenzimidazoles, aromatic polyimides, copolymers

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of the monomers thereof or blends thereof dyed with an aqueous mixture of a carrier and a dye soluble or dispersed in a dyebath, the carrier comprising N,N-diethyl(m-toluamide), an emulsifier, and a flame retardant.

Holsten's patent Claim 31

A fiber according to claim 30 wherein the emulsifier is a blend of the free acid form of a phosphated ethoxylated dialkyl phenol containing from about 2 to 20 moles of ethylene oxide and a non-ionic propoxylated-ethoxylated alcohol containing from about 20 to 75 moles of propylene oxide and 20 to 75 moles of ethylene oxide.

The claims of the parties originally designated as corresponding to Count 1 are (Paper No. 1 (Notice Declaring Interference), p. 19):

Riggins et al. application: Claims 1-13 and 65-68

Holsten et al. application: Claims 1, 3-12, 15-19, 23, 24, 26-32, 35-40, 43, 45-49 and 52.

Holsten et al. patent: Claims 1-39.

December 2, 1996 - Riggins filed Riggins' Preliminary Motion 1 under 37 CFR § 1.633(a) for judgment that Claims 1, 3-6, 8-12, 15, 16, 18, 19, 23, 24, 26-29, 31, 32, 35, 36, 38-40, 43, 45-48 and 52 of Holsten's involved application are unpatentable under 35 U.S.C. § 112, first paragraph (Paper No. 19).

December 2, 1996 - Riggins filed Riggins' Preliminary Motion 2 under 37 CFR § 1.633(c)(1) to redefine the interfering

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subject matter by (1) substituting proposed Count 2<sup>2</sup> for Count 1, (2) proposing amendments to Claims 65-68 (Riggins' Exhibit 4 (RX 4)) of Riggins' involved application to further define the dye diffusion promoting agent comprising an aromatic amide having 7 to 14 carbon atoms thereof as being "capable of increasing the swelling value [of aromatic polyamide fibrous material or fiber] at least 1.5%," and (3) proposing new method Claims 69-71 (RX 5) (Paper No. 20); and filed Riggins' Preliminary Motions 4 and 5 under 37 CFR § 1.633(c) (2-3) to designate amended Claims 65-68

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Riggins' Proposed Count 2

A method of dyeing, or flame-retardant treating, fibrous material selected from the group consisting of aromatic polyamide fibers, polybenzimidazole fibers, aromatic polyimide fibers, fibers of copolymers of the monomers thereof, or blends thereof, comprising contacting the fibers with an aqueous bath comprising a functional amount of a dye, or a flame-retardant, and a diffusion promoting agent comprising an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value of said fibers at least 1.5%, and heating the bath while in contact with the fibers;

or

A fibrous material or fiber selected from the group consisting of an aromatic polyamide, polybenzimidazole, aromatic polyimide, copolymers of the monomers thereof, or blends thereof, that has been dyed, of flame-retardant treated, with a bath comprising a dye, or a flame-retardant, and a diffusion promoting agent comprising an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value of the fibrous material or fiber at least 1.5%.

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as corresponding to proposed Count 2 and new Claims 69-71 as corresponding to the interference count. (Paper Nos. 22 and 23).

December 2, 1996 - Riggins filed Riggins' contingent Preliminary Motion 3 under 37 CFR § 1.633(f) to accord all Riggins' claims designated as corresponding to Count 2, namely Claims 1-13 and 65-68 of Riggins' involved application, benefit for the purpose of priority of Riggins' parent application filed March 16, 1992, and Riggins' grandparent application filed October 31, 1990 (Paper No. 21). Riggins' Preliminary Motion 3 is said to be contingent upon Riggins' Preliminary Motion 2 being granted.

December 2, 1996 - Riggins filed Riggins' contingent Preliminary Motion 6 under 37 CFR §§ 1.633(c)(2-3) to add new Claims 72-76, and designate new Claims 72-76 as corresponding to Count 1 (Paper No. 24). Riggins' Preliminary Motion 6 is contingent upon Riggins' Preliminary Motions 1 and 2 being denied (Paper No. 24, p. 2, first para.).

December 2, 1996 - Holsten filed Holsten's Preliminary Motion 1 under 37 CFR § 1.633(a) for judgment that Claims 65-68 of Riggins' involved application are unpatentable under 35 U.S.C. § 112, second paragraph (Paper No. 26).

December 2, 1996 - Holsten filed Holsten's Preliminary Motion 2 under 37 CFR § 1.633(a) for judgment that Claims 65-68

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of Riggins' involved application are unpatentable to Riggins under 35 U.S.C. §§ 102 and 103 over Kelly, U.S. Patent 4,525,168, patented June 25, 1985 (Holsten's Exhibit 2 (HX 2)) (Paper No. 27).

December 2, 1996 - Holsten filed Holsten's Preliminary Motion 3 under 37 CFR § 1.633(c)(4) to redefine the interfering subject matter by designating Claims 1-39 of Holsten's patent as not corresponding to the count (Paper No. 28).

February 7, 1997 - Riggins filed Riggins' Preliminary Motion 7 under 37 CFR § 1.633(i) to redefine the interfering subject matter by amending Claims 65-68 of Riggins' involved application and designating Claims 65-68 of Riggins' involved application, as amended, as corresponding either to Count 1 or to proposed Count 2 (Paper No. 37).<sup>3</sup>

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<sup>3</sup> At pages 30-31 of the Memorandum Opinion and Order (Paper No. 83), there is stated (footnote incorporated):

3. Riggins' response to Holsten Preliminary Motion 1 is Riggins Preliminary Motion 7, filed pursuant to 37 CFR § 1.633(i), seeking to amend Riggins '405 claims 65-68. Pursuant to a pre-hearing request, Riggins has submitted a proposed amendment (Riggins Exhibit 13 [(Paper No. 22 in the file of Riggins '405)] which requests that:

- a. claims 65-68 be canceled from Riggins '405 "without prejudice" and
- b. claims 78-81 (in place of claims 65-68, as proposed to be amended) be added to Riggins '405.

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February 7, 1997 - Riggins filed Preliminary Motion 8 under 37 CFR § 1.633(i) to redefine the interfering subject matter by adding new Claim 77 and designating new Claim 77 as corresponding to Count 1 or proposed Count 2 (Paper No. 38).

April 30, 1997 - Holsten replaced Holsten's Preliminary Motion 1 (Paper No. 26) with Holsten's amended Preliminary Motion 1 (Paper No. 76).

April 30, 1997 - Holsten replaced Holsten's Preliminary Motion 2 (Paper No. 27) with Holsten's amended Preliminary Motion 2 (Paper No. 77).

June 6, 1997 - A "Decision on preliminary and other motions" was entered of record as a Memorandum Opinion and Order (Paper No. 83) with the following findings of fact, conclusions of law, and orders:

Riggins' Preliminary Motion 1 (Paper No. 19) is denied (Paper No. 83, p. 26).

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. . . . .

5. Riggins' 405 claim 78 reads (underlined portion new vis-a-vis claim 65):

78. a method of dyeing aromatic polyamide fibers comprising contacting the fibers with an aqueous dyebath comprising a functional amount of at least one dye and a dye diffusion promoting agent comprising an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value at least 1.5%, and heating the fibers while in contact with the dyebath to fix the dye within the fibers.



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1. Claims 1, 3-6, 8-12, 15-16, 18-19, 23-24, 26-29, 31-32, 35-36, 38-40, 43, 45-48 and 52 of Holsten's involved application are not unpatentable under the first paragraph of 35 U.S.C. § 112 (Paper No. 83, p. 26).

2. Claims 1, 3-6, 8-12, 15-16, 18-19, 23-24, 26-29, 31-32, 35-36, 38-40, 43, 45-48 and 52 of Holsten's involved application are not unpatentable under 35 U.S.C. § 101 based on any lack of utility (Paper No. 83, p. 26).

Riggins' Preliminary Motion 2 (Paper No. 20) is denied (Paper No. 83, p. 28).

Holsten's claims corresponding to Count 1 do not include subject matter shown to be unpatentable to Holsten under 35 U.S.C. § 112, first paragraph (Paper No. 83, p. 28).

Riggins' contingent Preliminary Motion 3 (Paper No. 21) is dismissed (Paper No. 83, p. 29).

Holsten's Preliminary Motion 1 (Paper No. 76) is granted (Paper No. 83, p. 32).

Claims 65-68 of Riggins' involved application are unpatentable to Riggins (Paper No. 83, p. 32).

Riggins' Preliminary Motion 7 (Paper No. 37) is granted (Paper No. 83, p. 32).

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Riggins' amendment (Paper No. 22 in Riggins' involved application) proposing addition of Claims 78-81 to, and cancellation of Claims 65-68 from, Riggins' involved application, shall be entered (Paper No. 83, p. 32).

Claims 65-68 of Riggins' involved application are to be cancelled therefrom with prejudice.

Final judgment with regard to Claims 65-68 is entered against Riggins.

Claims 78-81 of Riggins involved application shall be designated as corresponding to the interference count.

Holsten's Preliminary Motion 2 (Paper No. 77) is denied (Paper No. 83, p. 39).

The subject matter of proposed Claims 78-81 of Riggins' involved application is not unpatentable under 35 U.S.C. § 102 over Kelly, U.S. Patent 4,525,168, patented June 25, 1985 (HX 2) (Paper No. 83, p. 39).

The subject matter of proposed Claims 78-81 of Riggins' involved application is not unpatentable under 35 U.S.C. § 103 in view of Kelly (Paper No. 83, p. 39).

The subject matter of Claims 1, 3-12, 15-19, 23, 24, 26-32, 35-40, 43, 45-49 and 52 of Holsten's involved application is not unpatentable under 35 U.S.C. § 102 over Kelly (HX 2) (Paper No. 83, p. 39).

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The subject matter of Claims 1, 3-12, 15-19, 23, 24, 26-32, 35-40, 43, 45-49 and 52 of Holsten's involved application is not unpatentable under 35 U.S.C. § 103 in view of Kelly (HX 2) (Paper No. 83, p. 39).

Riggins' Preliminary Motion 4 (Paper No. 22) is dismissed (Paper No. 83, p. 40).

Riggins' Preliminary Motion 5 (Paper No. 23) is granted (Paper No. 83, p. 41).

The amendment proposing addition of Claims 69-71 (RX 5) to Riggins' involved application, which amendment accompanied Riggins' Preliminary Motions 2 and 5 (Paper Nos. 20 & 23), shall be entered (Paper No. 83, p. 41). Claims 69-71 of Riggins' involved application shall be designated as corresponding to Count 1 (Paper No. 83, p. 41).

Riggins' Preliminary Motion 6 (Paper No. 24) is denied (Paper No. 83, p. 56).

The amendment proposing addition of Claims 72-76 (RX 6) to Riggins' involved application shall not be entered because proposed Claims 72-76 do not satisfy the requirements of 35 U.S.C. § 112, first and second paragraphs (Paper No. 83, p. 56).

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Riggins' Preliminary Motion 8 (Paper No. 38) is granted (Paper No. 83, p. 58).

The amendment proposing addition of Claim 77 (RX 7) to Riggins' involved application shall be entered (Paper No. 83, p. 58).

Claim 77 of Riggins' involved application shall be designated as corresponding to the count (Paper No. 83, p. 58).

The Memorandum Opinion and Order included the following redeclaration of interference (Paper No. 83, pp. 59-62):

In view of decisions made in connection with preliminary motions filed by the parties, the interference is redeclared as follows.

1. Count 2 is substituted for Count 1 . . . . :

Count 2

The process of claim 1 of the Riggins et al. application,

or

the process of claim 9 of the Riggins et al. application,

or

the process of claim 13 of the Riggins et al. application,

or

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the method of claim 69 of the Riggins et al.  
application,

or

the method of claim 70 of the Riggins et al.  
application,

or

the method of claim 71 of the Riggins et al.  
application,

or

the method of claim 77 of the Riggins et al.  
application,

or

the method of claim 78 of the Riggins et al.  
application,

or

the fibrous material of claim 79 of the  
Riggins et al. application,

or

the method of claim 80 of the Riggins et al.  
application,

or

the fibrous material of claim 81 of the  
Riggins et al. application,

or

the method of claim 1 of the Holsten et al.  
application,

or

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the fabric of claim 12 of the Holsten et al.  
application,

or

the method of claim 15 of the Holsten et al.  
application,

or

the fabric of claim 23 of the Holsten et al.  
application,

or

the method of claim 24 of the Holsten et al.  
application,

or

the method of claim 35 of the Holsten et al.  
application,

or

the fibrous material of claim 43 of the Holsten et al.  
application,

or

the fabric of claim 52 of the Holsten et al.  
application,

or

the method of claim 1 of the Holsten et al. patent,

or

the fabric of claim 9 of the Holsten et al. patent,

or

the method of claim 10 of the Holsten et al. patent,

or

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the fabric of claim 14 of the Holsten et al. patent,

or

the method of claim 15 of the Holsten et al. patent,

or

the method of claim 21 of the Holsten et al. patent,

or

the fibrous material of claim 25 of the Holsten et al. patent,

or

the fabric of claim 29 of the Holsten et al. patent,

or

the fiber of claim 30 of the Holsten et al. patent,

or

the fabric of claim 34 of the Holsten et al. patent,

or

the method of claim 35 of the Holsten et al. patent.

2. Riggins' '405 claims 69-71 and 77-81 are designated as corresponding to Count 2.

3. The claims corresponding to Count 2 are:

Riggins et al. application: 1-13, 69-71 and 77-81

Holsten et al. application: 1, 3-12, 15-19, 23,  
24, 26-32, 35-40, 43,  
45-49 and 52

Holsten et al. patent: 1-39

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4. The claims not corresponding to Count 2 are:

Riggins et al. application: None

Holsten et al. application: None

Holsten et al. patent: None[.]

The Memorandum Opinion and Order also included a Notice under 37 CFR § 1.641 addressing the patentability of the parties' claimed fibrous materials prepared by processes employing particular aromatic amide swelling agents over prior art fibrous materials prepared by processes employing other swelling agents or no swelling agent (Paper No. 83, pp. 63-73). The following Order issued therefrom (Paper No. 83, pp. 72-73):

ORDERED that, on this record, the product claims designated as corresponding to Count 2 are deemed to be prima facie unpatentable under 35 U.S.C. § 102/103.

FURTHER ORDERED that on or before July 15, 1997, the parties may respond to this notice under 35 U.S.C. § 1.641 [sic, 37 CFR § 1.641].

FURTHER ORDERED that on or before July 31, 1997, any responses will be reviewed and the results of that review communicated to the parties.

July 15, 1997 - A "Memorandum Opinion and Order" was entered which (Paper No. 86):

FURTHER ORDERED that the patentability of all product claims designated as corresponding to the count will be determined at final hearing on the basis of the responses to the notice under 37 CFR § 1.641 and any evidence which accompanies those responses.



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October 14, 1997 - Riggins filed a motion under 37 CFR § 1.634 to correct the designated inventorship of Riggins' involved application (Paper No. 94).

October 22, 1997 - Riggins filed a "Combined Paper Under Rule 1.641 And Preliminary Motion No. 9" (Paper No. 99) under 37 CFR 1.633(c) seeking to redefine the interfering subject matter by cancelling Claims 79 and 81 designated as corresponding to Count 2 without prejudice, adding proposed new Claims 82-85, and designating new Claims 82-85 as corresponding to Count 2.

February 5, 1998 - Riggins filed an objection under 37 CFR § 1.672(c) to the admissibility of Holsten's Exhibits 1-5 (Paper No. 109).

March 4, 1998 - In an Order Setting Time for Filing Briefs and Date for Final Hearing (Paper No. 111), Riggins' motion for correction of inventorship (Paper No. 94) and objection under Rule 1.672(c) to the admissibility of Holsten's Exhibits 1-5 (Paper No. 109) were deferred to final hearing.

April 30, 1998 - Riggins filed "Opening Brief of Junior Party Riggins et al." (RB) (Paper No. 121).

May 15, 1998 - Holsten filed "Opening Brief of Senior Party Holsten et al." (HB) (Paper No. 122).

June 26, 1998 - Riggins filed "Opposition Brief of Junior Party Riggins et al. (ROB) (Paper No. 123).

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June 26, 1998 - Holsten filed "Memorandum of Senior Party Holsten et al. in Opposition to Opening Brief of Riggins et al." (HOB) (Paper No. 124).

July 17, 1998 - Riggins filed "Riggins et al.'s Reply Brief to Holsten et al.'s Opposition to Riggins et al.'s Opening Brief" (RRB) (Paper No. 125).

July 17, 1998 - Holsten filed "Reply Brief of Senior Party Holsten et al." (HRB) (Paper No. 126).

October 15, 2001 - Final Hearing

2. Issues presented at final hearing

A. Issues raised under 37 CFR § 1.641

In the Memorandum Opinion and Order mailed June 6, 1997 (Paper No. 83, pp. 63-73), the subject matter of Holsten's and/or Riggins' product claims designated as corresponding to Count 2 was determined to be prima facie unpatentable under 35 U.S.C. §§ 102/103 over Minemura and Yamada, U.S. 3,953,167, issued April 27, 1976, (2) Soiron and Keller, U.S. 4,066,395, issued January 3, 1978, (3) Cates and Fitzgerald, U.S. 4,710,200, issued December 1, 1987, (4) Cates, Davis, Fitzgerald and Davis, U.S. 4,759,770, issued July 26, 1988, or (5) White, Ensley and Dalton, U.S. 4,780,105, issued October 25, 1988. The subject matter of Holsten's product claims designated as corresponding to Count 2 was determined also to be prima facie unpatentable under

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35 U.S.C. §§ 102/103 over the full disclosure of Riggins and Hansen, U.S. 4,898,596, issued January 9, 1989. The subject matter of Riggins' product claims designated as corresponding to Count 2 was determined also to be prima facie unpatentable for double patenting of the subject matter defined by claims of Riggins and Hansen, U.S. 4,898,596, issued January 9, 1989 (Paper No. 83, pp. 63-64). The prima facie case for unpatentability of the parties' product claims over the references cited was expressed as follows (Paper No. 83, pp. 70-71):

"[P]roduct" claims involved in this interference . . . are directed to what would appear to be dyed fibers or fabrics. Dyed fibers and fabrics, however, are known in the prior art. Hence, the dyed fibers and fabrics claimed by the parties would seem to be at least prima facie unpatentable under 35 U.S.C. §§ 102/103 under the principles announced in binding precedent, such as In re Spada, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990); In re Thorpe, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985); and In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

Supported by the specification of Riggins' patent, Claim 64 of Riggins' patent reads (HX 1, col. 14, l. 61-67):

64. Poly(m-phenyleneisophthalamide) fibers or fabric having 10% to 120% by weight of an aliphatic amide having 7 to 14 carbon atoms capable of increasing the swelling ratio at least 1.5% and excluding N-octyl-2-pyrrolidone and N-cyclohexyl-2-pyrrolidone to make the fibers or fabric receptive to dyeing, printing or flame retardant treating.

Supported by substantially the same disclosure, Claims 79 and 81 of Riggins' involved application designated as corresponding to

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Count 2 of this interference read (HX 1, col. 14, l. 61-67):

79. A fibrous material or fiber of an aromatic polyamide that has been dyed with a dyebath comprising a mixture of a dye diffusion promoting agent and a dye soluble or dispersed with said agent, said agent comprising an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value at least 1.5%.

81. A fibrous material or fiber of an aromatic polyamide that has been treated with a flame retardant bath comprising a mixture of a flame retardant diffusion agent and a flame retardant soluble or dispersed with said agent, said agent comprising an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value at least 1.5%.

If the Patent and Trademark Office (PTO) has good reason to believe that a dyed fiber or fabric as described in a prior art reference is identical or substantially identical to dyed fiber or fabric claimed by a party to this interference, the PTO may require proof that the party's claimed product and the prior art product are not necessarily the same, inherently identical, or substantially identical, and/or the party's claimed product would not have been obvious to persons having ordinary skill in the art in view of the prior art teaching. Where the products a party claims and the prior art describes reasonably appear to be identical or substantially identical, the PTO may require proof that they are not. "Whether the rejection is based on 'inherency' under 35 USC 102, on 'prima facie obviousness' under 35 USC 103, jointly or alternatively, the burden of proof is the

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same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products." In re Best, 562 F.2d 1252, 1255-1256, 195 USPQ 430, 433-434 (CCPA 1977) (footnote omitted).

Here, the specification of Riggins' patent teaches that "dye and FR [(fire retardant)] fixation [was obtained] in this process using dye diffusion promoting agent concentrations of 10 to 120 percent on weight of fabric" (HX 1, col. 5, l. 25-27). However, the specification of Riggins' patent also teaches that "[r]esidual agent is removed by scouring at the boil" (HX 1, col. 5, l. 33-36), and "[a]fter dyeing, the fabric was rinsed in warm tap water, and then scoured in fresh tap water at 1000° C.<sup>[4]</sup> . . . for 15 minutes" (HX 1, col. 6, l. 59-61). Nevertheless, the specification of Riggins' U.S. Patent 5,306,312 (HX 1) expressly states (HX 1, col. 3, l. 24-57; emphasis added):

Disclosed is a process for dyeing or flame retardant treating, or if preferred, both dying and simultaneously improving the flame-resistant properties of poly(m-phenyleneisophthalamide) fibers. The process includes the steps of introducing the fiber into a fiber dyeing solution containing a tinctorial amount of at least one dye in combination with selected dye diffusion promoters as defined below, and optionally, at least one flame retardant . . . then heating the fiber and solution at a temperature and for a sufficient period of time to

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<sup>4</sup> Note a Certificate of Correction for Riggins et al., U.S. Patent 5,306,312, dated April 26, 1994, replaced "1000° C." at Column 6, line 60, thereof with "-100° C.-".

dye and flame retardant treat (when flame retardant is present) the fibers.

In another embodiment of the invention, we have discovered the advantages of a two step process in which a dye diffusion promoting agent is applied in an initial step prior to further processing such as dyeing or treating with a flame retardant or both. Initial treatment with a dye diffusion promoting agent leaves residual promoting agent on the aramid fabric, which may then be sold to processors in this condition for subsequent dyeing and/or flame retardant treating. The separate application of the dye diffusion promoting agent prior to dyeing sometimes results in better dyeing than does the use of the dye diffusion promoting agent directly with the dye(s) as well as higher levels of flame resistance.

The two-step process allows for the dyeing of fully or partially constructed garments by first treating the fabric width [sic] the dye diffusion promoting agent, an effective amount of which remains on the fabric. A garment is then fully or partially constructed and dyed to the appropriate shade.

The specification of Riggins' patent ultimately teaches (HX 1, col. 7, l. 54, to col. 8, l. 67; emphasis added):

6. Dyeing - Among the monosubstituted amides . . . only the butylbenzamide showed some promise as a dye diffusion agent. Among the disubstituted amides . . . and the pyrrolidones . . . the following dye diffusion promotion agents all produced dark dyeing and are of special interest:

| No. | Chemical              | No. of Carbons | Swelling Value |
|-----|-----------------------|----------------|----------------|
| 5   | Dibutylformamide      | 9              | 1.5            |
| 7   | Dibutylacetamide      | 10             | 4.5            |
| 8   | Dipropylpropionamide  | 9              | 3.9            |
| 12  | Dimethylhexamide      | 8              | .9             |
| 15  | Dimethylcaprylamide   | 10             | 2.2            |
| 18  | Diethylbenzamide      | 11             | 3.6            |
| 19  | Dipropylbenzamide     | 13             | 7.2            |
| 22  | Cyclohexylpyrrolidone | 10             | 5.5            |
| 23  | n-Octylpyrrolidone    | 12             | .1             |

These dye diffusion promoting agents all contain between 8 and 13 carbon atoms in their structure and show a positive dyed-only swelling value. Those amides containing less than 7 or more than 14 carbon atoms . . . were ineffective, as were all the structures producing a negative dyed only swelling value. It thus appears that a combination of two properties - 7 to 14 carbon atoms in the molecular structure and a positive swelling value - is sufficient to define an effective class of dye diffusions [sic] promoting agents for fibers such as Nomex.

7. Dyeing and Flame Retarding - Two separate procedures for dyeing and flame retarding have been described above. In Procedure A, dyeing and flame retarding were conducted simultaneously, while procedure B is surprisingly effective in imparting enhanced flame resistance to Nomex Fibers, in spite of the fact that much of the diffusion promoting agent has been removed by scouring. This result suggests that the diffusion promoting agent has produced a change in the structure of the Nomex which makes it easier for flame retardant, and possibly dyes, to enter the fiber. Procedure B is useful for a two-step process for flame retarding Nomex or for the printing of patterns on Nomex fabric dyed to a solid background shade.

Given identical teachings in the specifications of Riggins' patent and Riggins' involved application that scouring at boil to remove residual diffusion promoting agent after initial treatment of aromatic polyamide fibrous material or fiber with a dye and/or flame retardant diffusion promoting agent removes "much" of the diffusion promoting agent, it is unclear from Riggins' disclosures that (1) some residual amount of diffusion promoting agent remains on post-scoured aromatic polyamide fibrous material or fiber, and (2) this residual amount of diffusion promoting agent, if any, patentably distinguishes the

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products claimed by the parties to this interference from the products the prior art would have described or reasonably suggested to persons having ordinary skill in the art.

However, we need not consider whether a prima facie case of unpatentability of each party's claimed product under 35 U.S.C. §§ 102/103 has been established over the cited prior art and/or whether the Rule 641 Order (Paper No. 83) for additional evidence in support of the patentability of each party's claimed product was warranted because of the evidence and arguments presented in Riggins et al.'s Combined Paper Under Rule 1.641 and Preliminary Motion No. 9 (Paper No. 99).

The evidence Riggins submitted in response to the Rule 641 Order (Paper No. 83) includes the following testimony of Dr. Riggins (Declaration of Phillip H. Riggins, Ph.D., dated October 22, 1997 (RX 29)) (RX 29, p. 2, para. 2-5):

2. When aromatic polyamide (commonly known as "aramid") fibers and fabrics are dyed with an aromatic amide carrier a residual amount of the aromatic amide carrier remains in the fibers and fabrics after dyeing and scouring.

3. In October 1997, I conducted experiments to demonstrate that residual aromatic amide carrier remains in aromatic polyamide fibers and fabrics, such as Nomex, after dyeing with the carrier and scouring. As indicated in my write-up of my experiments (attached as Riggins et al. Exhibit No. 29(a)), all aromatic amide carriers (DEB, DEET, DIP) showed residual carrier in the Nomex aramid fiber after dyeing and scouring.



4. The range of residual carrier for the aromatic amide carriers (DEB, DEET, DIP) was from 6.0% to 9.0%. Based on my experience with commercial dyeing and three test results, I anticipate that a range of 1.0% to 10.0% residual aromatic amide carrier would remain on aromatic polyamide fibers and fabrics.

5. One benefit of the residual carrier is that it enhances the printability of the dyed and scoured aromatic polyamide fibers and fabrics.

Riggins' declaration is amply supported by Riggins' Exhibit 29(a) (RX 29(a)). Exhibit 29(a) appears to be a memorandum entitled Residual Carrier Testing dated October 10, 1997, from H. Riggins to Mary Sullivan (RX 29(a), p. 1). The Memorandum reads in pertinent part (RX 29(a), pp. 1-2):

Judge McKelvey raised a question of carrier remaining in piece dyed fabrics involving aromatic amide carriers. A series of dyeings were done on Nomex IIIA and after washing, residual carrier was determined by the "DuPont Test Method", attached [RX 29(a), p. 3].

An outline of treatment is:

- 1) Hem and scour, condition fabrics.
- 2) Dye 60 min. at 270°F  
Formula - 3 gpl Formic acid  
40 gpl Carrier  
100% owf of Navy stock, Basic dyes  
20 gpl Sodium nitrate  
Dye bath ratio to fabric 10:1
- 3) Afterscour, condition and test

Note: Prescouring was conducted on approximately 200gms of fabric in a Sears washing Machine on low volume (12 gal) warm rinse and wash, with 90 g. of apexomine 511-S (Surfactant) and 22.5 g of Soda ash.

Afterscouring, repeated prescouring plus additional identical cycle but at 140°F.

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Results:

|             |        |         |           |        |        |        |        |
|-------------|--------|---------|-----------|--------|--------|--------|--------|
| Sample ID   | 10-F-1 | 10-G-2  | 10-H-3    | 10-I-4 | 10-J-5 | 10-K-6 | 10-L-7 |
| Carrier ID  | None   | "Dymex" | BenzylAlc | DIP    | CHP    | DEET   | DEB    |
| Initial Wt. | 25.20  | 27.40   | 26.69     | 26.37  | 27.12  | 26.54  | 26.81  |
| Hemmed Wt.  | 25.40  | 27.54   | 26.90     | 26.56  | 27.33  | 26.75  | 27.02  |
| Prescoured  |        |         |           |        |        |        |        |
| Wt.         | 24.79  | 27.21   | 26.31     | 25.99  | 27.08  | 26.35  | 26.67  |
| Dyed Wt.    | 24.56  | 28.40   | 26.94     | 28.54  | 30.01  | 29.69  | 29.40  |
| % Addon     | -0.9   | 4.4     | 2.4       | 9.9    | 10.9   | 12.8   | 10.3   |
| Residual    |        |         |           |        |        |        |        |
| carrier     | 0.0    | 3.6     | 4.0       | 8.8    | 5.4    | 7.4    | 5.9    |
| Color - L   | 32.58  | 17.94   | 18.82     | 18.26  | 17.65  | 17.44  | 17.24  |
| a           | -0.04  | 0.38    | 0.49      | 0.09   | 0.14   | 0.23   | 0.21   |
| b           | -19.62 | -6.18   | -8.73     | -6.14  | -6.00  | -6.61  | -6.19  |

Further Identification of carriers -

- Dymex - A self emulsifiable formulated acetophenone sold by Sandoz.
- Benzyl alcohol is a pure chemical.
- DIP . Represents N,N-dipropylbenzamide, prepared by reaction of benzoyl chloride and dipropylamine.
- CHP . Represents N-cyclohexylpyrrolidone, sold by BASF or ISP.
- DEET . Represents N,N-diethyl-m-toluamide sold by Morflex and Henkel
- DEB . Represents N,N-diethylbenzamide, prepared by reaction of benzoyl chloride and diethylamine.

Discussion.

Clearly, all these carriers showed substantial residual carrier in Nomex aramid fiber after dyeing/scouring. The range of residual carrier for aromatic amide carriers (DEB, DEET, DIP) was about 6 to 9%. Keeping in mind that other selection of carrier (dimethylbenzamide or dibutylbenzamide), or carrier level might affect residual, a range of 1-10% residual might be anticipated for aromatic amide carriers from these trials and data. It seems worth followup to better define the consequences of residual carrier on aramid fiber/fabric properties beyond what we already know - as in camo processing.

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Moreover, the specifications and product claims of Holsten's patent and Holsten's involved application are consistent with Riggins' declaration that 1-10% of residual carrier might be expected for other aromatic carriers employed in methods for dyeing and/or FR treating difficult to dye and/or FR treat fibers and fabrics.

In this case, whether or not persons having ordinary skill in the art would have understood that the prior art of record prima facie describes and/or would have reasonably suggested the identical or substantially identical fiber, fibrous material, or fabric of the claims of each of the parties designated as corresponding to the interference count absent Riggins' declaration and supporting evidence, the understanding becomes unreasonable in light of all the evidence now before us. Considered as a whole, the evidence of record predominantly supports the view that the fiber, fibrous material, and fabric of the parties' claims designated as corresponding to Count 2 not only contain carrier residue which persons having ordinary skill in the art would not have expected in the fiber, fibrous material, or fabric the prior art describes, but it also supports the view that the carrier residue present in the fiber, fibrous material, or fabric each of the parties claim is present in an amount effective to alter the composition, appearance, and/or

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practical utility of the claimed product. Accordingly, in light of all the evidence now of record, it is:

ORDERED that the action taken in this interference under 37 CFR § 1.641 is withdrawn; and

FURTHER ORDERED that Preliminary Motion No. 9 (Paper No. 99) under 37 CFR 1.633(c) seeking to redefine the interfering subject matter by cancelling Claims 79 and 81 designated as corresponding to Count 2 without prejudice, adding proposed new Claims 82-85, and designating new Claims 82-85 as corresponding to Count 2, which was filed by Riggins in response to action taken in this interference under 37 CFR § 1.641, now withdrawn, is dismissed.

B. Priority of the invention defined by Count 2

(1) Preliminary matters

Holsten argues that, to establish priority for the invention defined by Count 2 of this interference, Riggins not only must show that it was first to reduce an embodiment of a claim of Riggins' involved application corresponding to the count, but Riggins also must show that it contemporaneously conceived of the full scope of the invention defined in Riggins' involved application and its claims. For example, Holsten argues (Memorandum of Senior Party Holsten et al. in Opposition to Opening Brief of Riggins et al., Paper No. 124, pages 3-4 (HOB, pp. 3-4):

In an effort to establish a case of priority even arguably antedating Holsten et al.'s conception and reduction to practice, Riggins attempts in its Opening Brief to abandon the entire theory of its invention as previously advocated throughout these proceedings, beginning with the preliminary motion period. In particular, Riggins has repeatedly espoused the theory throughout this action that its invention consists of the discovery that a successful "dye diffusion promoting agent" for use in dyeing aramid fabrics possesses two distinct and essential characteristics.

. . . Riggins has repeatedly advanced the proposition that a successful dye diffusion agent must have between 7-14 carbon atoms and provide a so-called "swelling value" on the fabric of at least 1.5% as defined in Riggins' patent application. . . . .

. . . . .

Accordingly, by Riggins' own admission, it was not until some time in the period between April 16 and May 7, 1990 that Riggins actually conceived and reduced his invention to practice . . . .

Holsten explains further (HOB, p. 5, last para.):

The invention of the Count involved in this interference relates to the use of aromatic amides as dyeing assists in the dyeing of aramid fabrics. . . . [I]t was not until after the events recited in paragraph 31 of Riggins Affidavit that Riggins actually demonstrated to his satisfaction that aromatic amides could be used for this purpose, consistent with the limitations with respect to the number of carbon atoms and requisite so-called swelling value which the inventor deemed essential to the concept.

According to Holsten, Riggins could not have reduced the "invention" of Count 2 to practice until Riggins recognized the limitations in Riggins' claims designated as corresponding to Count 2 with respect to the number of carbon atoms and so-called

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swelling value which Riggins deemed essential to its inventive concept (HOB, p. 7):

. . . Riggins goes to some lengths in its Opening Brief to create the illusion that Riggins had successfully reduced the "invention" to practice in late February of 1990 . . . [.] Riggins' notebook entries and subsequent experimentation belie this suggestion.

Holsten emphasizes (HOB, p. 8):

In fact, and of material note, the swelling values reported in the Affidavit had not been determined as of mid to late March when the experiments were actually performed so that Riggins could not have ascertained this "critical" aspect of the claimed invention as of this time. Riggins Depo. Tr. 137 (lns. 4-17).

Accordingly, Holsten urges that the evidence as a whole denies Riggins' allegation that it was first to invent the "invention" of Count 2 (HOB, pp. 10-11):

In light of Riggins' testimony in this proceeding, it becomes apparent that it was not until after April 10, 1990 that Riggins actually pursued the series of test procedures which led to the so-called discovery involved in this proceeding that useful "dye diffusion promoting agents" could be based on aromatic amides and further provided that the specific amide selected possessed the properties which Riggins has deemed essential in these proceedings.

While Holsten espouses the axiom that the "invention" for which Riggins must establish priority is an invention defined by the interference count, i.e., Count 2, Holsten argues that Riggins' showing does not establish that Riggins conceived of its method for dyeing fibrous material or fiber of an aromatic polyamide comprising "contacting the fibers with an aqueous

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dyebath comprising a functional amount of at least one dye and a dye diffusion promoting agent comprising an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value at least 1.5%, and heating the fibers while in contact with the dyebath" (Riggins' involved application, Claim 78 designated as corresponding to Count 2) prior to the date Holsten first conceived and reduced its invention to practice. In particular, Holsten argues that Riggins could not have conceived and actually reduced to practice the invention it claims before Holsten conceived and actually reduced to practice the invention it claims no later than April 10, 1990.

Holsten does not deny that Riggins tested various N,N-disubstituted aromatic carbonamides for utility as dyeing assistants in conventional methods for dyeing aramid fiber, e.g., Nomex fabric. Riggins' test method comprised the step of contacting Nomex fabric with a dyebath comprising Acid blue #62 and each proposed dyeing assistant for one and one-half hours at 265°F. The evidence prima facie shows that no earlier than February 16, 1990, and no later than February 22, 1990, Riggins tried to dye Nomex fabric (12.21 grams) with a dyebath comprising Acid blue #62 (2% of the weight of the fabric) and N,N-dibutylbenzamide (4 grams) for one and one-half hours at 265°F. (RX 22, p. 28). The evidence prima facie shows that no

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earlier than February 16, 1990, and no later than February 22, 1990, Riggins tried to dye Nomex fabric (12.23 grams) with a dyebath comprising Acid blue #62 (2% of the weight of the fabric) and N,N-dimethylbenzamide (4 grams) for one and one-half hours at 265°F. (RX 22, p. 28). The evidence prima facie shows that no earlier than February 20, 1990, and no later than March 22, 1990, Riggins tried to dye Nomex fabric (10.83 grams) with a dyebath comprising Acid blue #62 (2% of the weight of the fabric) and N,N-diethylbenzamide (4 grams) for one and one-half hours at 265°F. (RX 22, p. 29). The evidence prima facie shows that, no later than February 26, 1990, Riggins recorded that N,N-diethyl benzamide was "effective in promoting the dyeing of Nomex" (RX 22, p. 31), and that, no later than February 27, 1990, Riggins reported that N,N-diethylbenzamide had "dye promoting activity" in a Memorandum from H. Riggins to Ben Triplett relating to "Dye Promoters for Nomex" (RX 26). However, Holsten argues that Riggins did not appreciate the concept of using "a dye diffusion promoting agent comprising an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value at least 1.5%" for relatively effective dyeing of aramid fiber or fabric until after the date Holsten is said to have conceived and reduced to practice the subject matter Holsten claims.



As we understand Holsten's written arguments (HOB (Paper No. 124) and HRB (Paper No. 126)) and Holsten's oral presentation at final hearing, Holsten argues that Riggins cannot establish priority of invention for the subject matter defined by Count 2 before the date Riggins both (1) recognized that dye diffusion promoting agents comprising an aromatic amide having 7 to 14 carbon atoms capable of increasing the swelling value at least 1.5% effectively promote dyeing aramid fiber or fabric, and (2) showed that at least one such dye diffusion promoting aromatic amide having 7 to 14 carbon atoms which increases the swelling value of aramid fabric at least 1.5% effectively promotes dyeing of an aramid fiber or fabric. In other words, Riggins cannot show that it reduced to practice subject matter defined by Count 2 before the date Riggins first conceived of the full scope of the invention encompassed by its claims designated as corresponding to Count 2 and proved that a species of the dye diffusion promoting agents defined by the claims of Riggins' involved application effectively promotes dyeing of aramid fiber or fabric.

Holsten presumes that Riggins cannot establish priority of invention with respect to the subject matter defined by Count 2 absent a showing that Riggins conceived of the invention defined by the claims in Riggins involved application. Since Riggins's

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claims, and the subject matter Riggins appears to regard as its invention, require a dye diffusion promoting aromatic amide having 7 to 14 carbon atoms which increases the swelling value of aramid fabric at least 1.5%, Holsten argues that Riggins did not, and could not, establish priority of invention with respect to the subject matter defined by Count 2 before the date Holsten conceived of the invention it claims and reduced it to practice. We disagree. At oral argument at Final Hearing on October 15, 2001, Holsten's counsel urged that Riggins cannot establish priority for subject matter encompassed by Count 2 which is unpatentable to Riggins, i.e., subject matter defined by each claim of Holsten's involved application or Holsten's patent alternatively corresponding to Count 2. Again, we disagree.

Riggins seeks to establish priority of the invention of Count 2 of this interference. Count 2 is drawn alternatively to each of one or more claims of Riggins' involved application or each of one or more claims of Holsten's involved application or each of one or more claims of Holsten's patent, i.e., Count 2 is directed to subject matter defined by Claim 1 or 9 or 13 or 69 or 70 or 71 or 77 or 78 or 79 or 80 or 81 of Riggins' involved application or to subject matter defined by Claim 1 or 12 or 15 or 23 or 24 or 35 or 43 or 52 of Holsten's involved application or to subject matter defined by Claim 1 or 9 or 10 or 14 or 15 or

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21 or 25 or 29 or 30 or 34 or 35 of Holsten's patent. To establish priority of invention with respect to Count 2 of this interference, Riggins needs only to establish that it reduced to practice an embodiment encompassed by any one of the claims to which Count 2 is alternatively drawn.

"In order to establish an actual reduction to practice, the inventor must prove that: (1) he constructed an embodiment or performed a process that met all the limitations of the interference count; and (2) he determined that the invention would work for its intended purpose." Cooper v. Goldfarb, 154 F.3d 1321, 1327, 47 USPQ2d 1896, 1901 (Fed. Cir. 1998). We emphasize the word "count." The inventor must prove that it constructed an embodiment meeting all the limitations of the interference "count." "In addition, the inventor must contemporaneously appreciate that the embodiment worked and that it met all the limitations of the interference count." Cooper v. Goldfarb, 154 F.3d at 1327, 47 USPQ2d at 1901 (emphasis added). In this interference, the "count" (Count 2) is alternatively directed to the invention defined by any one of the designated claims of Riggins' involved application or the invention defined by any one of the designated claims of Holsten's involved application or Holsten's patent. Thus, to establish an actual reduction to practice in this interference,

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Riggins must prove that (1) it made a product or performed a process that met all the limitations of any one of the claims of Riggins' involved application or any one of the claims of Holsten's involved application or any one of the claims of Holsten's patent to which Count 2 is alternatively directed, and (2) it determined that that product or process would work for its intended purpose. Riggins is not required to prove that it made a product or performed a process that met all the limitations of one or more of the claims of Riggins' involved application. Riggins may establish an actual reduction to practice of the invention defined by Count 2 of this interference by proving that it made a product or performed a process that met all the limitations of an invention defined by any one of the claims of Holsten's involved application or any one of the claims of Holsten's patent. See Cooper v. Goldfarb, 240 F.3d 1378, 1382, 57 USPQ2d 1990, 1992 (Fed. Cir. 2001):

When two patent applications are directed to the same invention, the Patent Office declares an "interference" between the applications to determine which applicant is entitled to priority of invention. See 35 U.S.C. . . . § 135 . . . . The precise scope of the interfering subject matter is defined by the interference "count." 37 C.F.R. § 1.601(f) (2000). Priority is generally awarded to the applicant who was first to reduce the invention to practice . . . .

37 CFR § 1.601(f) (2000) reads (emphasis added):

A count defines the interfering subject matter between two or more applications or between one or

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more applications and one or more patents. At the time the interference is initially declared, a count should be broad enough to encompass all the claims that are patentable over the prior art and designated to correspond to the count. When there is more than one count, each count shall define a separate patentable invention. Any claim of an application or patent that is designated to correspond to a count and is identical to the count is said to correspond exactly to the count. A claim of a patent or application that is designated to correspond to the count but is not identical to the count is said to correspond substantially to the count. When a count is broader in scope than all claims which correspond to the count, the count is a phantom count.

To establish a reduction to practice, Riggins may prove that it made a single embodiment of a product, or performed one process, which meets all the limitations of any one of the claims of Holsten's involved application or Holsten's patent which corresponds to the Count 2. Breuer v. DeMarinis, 558 F.2d 22, 24 n.5, 194 USPQ 308, 309 n.5 (CCPA 1977), teaches:

The reduction to practice of a single species within the scope of the count constitutes a reduction to practice of the invention defined by the count for purposes of priority in an interference proceeding. Mikus v. Wachtel, 504 F.2d 1150, 183 USPQ 752 (CCPA 1974); Den Beste v. Martin, . . . 252 F.2d 302, 116 USPQ 584 ([CCPA] 1958).

"[I]t is axiomatic that an actual reduction to practice of a single species within the scope of a count constitutes a reduction to practice of the invention defined by the count for purposes of priority." Nashef v. Pollock, 4 USPQ2d 1631, 1637 (Bd. Pat. App. & Int. 1987). That an actual reduction to practice of any single embodiment or one process encompassed by

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the count constitutes a reduction to practice of the invention defined by the count for purposes of priority was most recently reaffirmed in Cooper v. Goldfarb, 240 F.3d at 1384, 57 USPQ2d at 1994 (emphasis added):

[I]n order to establish reduction to practice, the inventor must prove that he made an embodiment of his invention that met all of the limitations of the interference count and that he determined that the interference would work for its intended purpose. Cooper . . . [v. Goldfarb], 154 F.3d at 1327, 47 USPQ2d at 1901. The inventor also must prove that he "contemporaneously appreciate[d] that the embodiment worked and that it met all the limitations of the interference count." Id. What that means in terms of this case is that Cooper must establish that he made ePTFE material having fibril lengths within the scope of the interference count, that he determined that the material would be useful as a vascular graft, and that he knew, at the time of his alleged reduction to practice, both that the material had the properties recited in the count and that it would be useful as a graft.

Similarly, it is evident that a first party to an interference may establish an actual reduction to practice of the invention of the interference count by proving that it made a product or performed a process defined solely by the claims of the other party to the interference corresponding to the count. See Cooper v. Goldfarb, 240 F.3d at 1385, 57 USPQ2d at 1995 (emphasis added):

Cooper also argues that he himself knew the fibril lengths of the material sent to Goldfarb. If that were true, then he could establish reduction to practice even though Goldfarb's determination of the fibril lengths does not inure to his benefit.

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A first party to an interference may establish that it reduced to practice subject matter encompassed by a count which the second party exclusively claims even though the subject matter the second party claims is not patentable to the first party. It is well settled that "a count is a vehicle for contesting priority and may not necessarily be allowable to a winning party or be proper under § 112 (e.g. a phantom count). Hedgewick v. Akers, 497 F.2d 905, 909 n.6, 182 USPQ 167, 169 n.6 (CCPA 1974)." Hunt v. Treppschuh, 523 F.2d 1386, 1389, 187 USPQ 426, 429 (CCPA 1975). Squires v. Corbett, 560 F.2d 424, 433, 194 USPQ 513, 519 (CCPA 1977), adds (emphasis added):

The "count" . . . is merely the vehicle for contesting priority which . . . effectively circumscribes the interfering subject matter, thereby determining what evidence will be regarded as relevant on the issue of priority. The "count," as distinguished from a party's "claim," need not be patentable to either party . . . .

If it is not required that the subject matter defined by a count be patentable to either party, there most certainly is no requirement that the subject matter Riggins reduced to practice, i.e., subject matter seemingly encompassed by the claims of Holsten's involved application corresponding to the count, be patentable to Riggins.

(2) Holsten's priority dates

Riggins does not dispute "most, if not all," the facts alleged by Holsten in its Opening Brief (ROB, p. 1, first para.):

After having considered Holsten et al.'s Opening Brief, Riggins et al. has concluded that most, if not all, of the facts alleged by Holsten et al. are not in dispute. Because Riggins et al. was clearly the first to invent under the facts presented by both parties, Riggins et al. finds little in Holsten et al.'s Opening Brief to oppose. However, there are two issues regarding Holsten et al.'s case, as presented in Holsten et al.'s Opening Brief, that merit discussion in this Opposition Brief. First, even if every fact alleged in Holsten et al.'s Opening Brief is taken as true, Dr. Phillip H. Riggins . . . would still be the first to invent the invention of the Count and therefore would be entitled to a patent for that invention. The second issue concerns the failure of Holsten et al. in satisfying the corroboration "rule of reason."

More particularly with regard to Holsten's facts, Riggins states (ROB, p. 1, last para.):

In Holsten et al.'s Opening Brief, Holsten et al. state that, no later than April 10, 1990, Mr. Moses Smith . . . at the direction of Dr. John R. Holsten . . . and Mr. Nigel E. Neely . . . used N,N-diethyl (m-toluamide), benzanilide, and N,N-dimethylbenzamide to perform dyeing experiments. It is further stated by Holsten et al. that this experimentation constituted a reduction to practice of the invention of the Count.

Riggins does not dispute Holsten's findings with regard to its reduction to practice of subject matter encompassed by Count 2 because Riggins maintains that it was first to actually reduce to practice subject matter encompassed by Count 2 (ROB, pp. 2-3; footnotes omitted):

The party Riggins et al. does not take issue with Holsten et al.'s alleged reduction to practice since, even if the reduction did in fact occur, it was not until long after Dr. Riggins' own reduction to practice of the invention of the Count. . . .



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The record clearly establishes that Dr. Riggins successfully dyed Nomex<sup>®</sup> fabric with N,N-diethylbenzamide (an aromatic amide containing between 7 and 14 carbon atoms and having a swelling value of at least 1.5%) no later than February 26, 1990, more than one month prior to Holsten et al.'s alleged reduction to practice. Because Dr. Riggins experimentation with N,N-diethyl benzamide satisfied every limitation of Count 2 and revealed that N,N-diethylbenzamide worked for its intended purpose, Dr. Riggins was first to invent the N,N-diethylbenzamide species of the invention of the Count. In that the reduction to practice of a single species of a claimed genus establishes priority to the entire genus, Dr. Riggins was first to invent the invention of the Count.

Accordingly, we look to Holsten's Opening Brief for the precise dates Holsten alleges either to have (1) first actually reduced to practice an embodiment of Count 2 of this interference to practice, or (2) first conceived of the invention of Count 2 coupled with reasonable diligence toward constructive reduction to practice of the invention defined by Count 2. Holsten concludes (HB, p. 17):

[T]he documentary evidence well corroborates the testimony of Dr. Holsten and Mr. Neely that the invention of the Count, as defined in the claims of the Holsten et al. application in interference, was fully conceived by the inventors and reduced to practice by no later than April 10, 1990.

The conclusions in Holsten's Opening Brief are based on the following undisputed facts (HB, pp. 7-11):

12. In early 1990, Holsten was assigned a project to develop alternative carrier systems for use commercially . . . in the dyeing of aramid fabrics . . . .

13. [O]n March 26, 1990, Dr. Holsten discussed with co-inventor Nigel Neely the possibility of using particular, alternative classes of chemicals as carriers in dyeing aramid fabrics and including the possible use of unsubstituted and mono N-substituted amides . . . .

14. Holsten recorded his observations from the discussions at page 37 of his notebook number 216 (Holsten Ex. 6) dated on March 27, 1990 and witnessed by Michael Simmons . . . on the same date. The recorded observations by Holsten include the following:

In discussions with Nigel Neely on March 26<sup>th</sup>, we revealed similar ideas to each other in that we had both wondered if unsubstituted and mono-N-substituted amides might function as basic dye carriers in the dyeing of aromatic polyamides. Included in such categories would be benzamide and benzanilide, both crystalline products with limited or no significant water solubility . . . . Based upon our conversation Nigel Neely ordered samples of acetamide[,] benzamide and benzaniline . . . for evaluation singly or in combination as basic dye carriers useful dyeing aromatic polyamides.

Holsten Ex. 6, N.B. 216, p. 37 (3/27/90) . . . .

. . . . .

16. [O]n April 5, 1990, Holsten recorded the additional observation that N,N-diethyl(m-toluamide) might additionally be used as a carrier for use in dyeing aromatic polyamide fibers or fabrics . . . . Holsten Ex. 7, N.B. 216, p. 47 (4/5/90). The notebook entry also reflects a disclosure and discussion of the additional proposed use of N,N-dimethylbenzamide and benzanilide, additional N-substituted and disubstituted aromatic carbonamides as candidate dye carriers, as described to and discussed with Neely as well. . . . .

17. Based on the discussions between Holsten and Neely, a series of laboratory dyeings were performed at their direction by . . . Moses Smith, Jr., including experiments using benzamide and benzanilide . . . as recorded by Smith on March 30, 1990 (Holsten Ex. 10)

and using the procedure outlined by Dr. Holsten at page[s] 216-31 of Holsten's notebook (Holsten Ex. 8) entitled, "Basic Dye Carrier Formulations and Evaln. In the Dyeing of Nomex Fabric." . . . Ex. 8 - 3/14/90. An additional dyeing using dimethylbenzamide was also performed by Smith as recorded in his notebook at page 140 and witnessed by Neely. . . . Holsten Ex. 10, p. 2.

18. Some time between April 2<sup>nd</sup> and April 10, a sample of N,N-diethyl(m-toluamide) was received and used to perform further dyeing experiments. The observations from these and the additional dyeings reflected above were recorded by Neely at page 131 of his notebook number 151 on April 10, 1990 as witnessed by Cathy L. Beck (then Cathy B. Cannup) on April 11, 1990 (Holsten Ex. 9) . . . .

19. [O]n notebook page 131 . . . Neely . . . observed that [benzanilide] . . . dyed "extremely well (2 g/100ml)." With respect to N,N-dimethylbenzamide, Neely similarly observed that it "dyes well, just slightly lighter than Springs HP-2 carrier." . . . With respect to N,N-diethyl(m-toluamide), Neely observed that it dyed "extremely well at 1g/100ml, 1.5g/100ml and 2g/100ml." . . . .

20. Neely also made an additional entry, close to the top of notebook page 131 on April 10, 1990 . . . that: "It appears that the presence of the benzene ring + substitution of the N atom of the amide group is crucial to a good dyeing of Nomex." . . . .

Based on Holsten's corroborated findings, reprinted in-part above, findings which are not disputed by Riggins but for the sufficiency of their corroboration, we conclude that Holsten conceived of the invention of Count 2 no earlier than March 26, 1990, and actually reduced to practice an embodiment of Count 2 no later than April 10, 1990. Accordingly, if as Riggins urges, it has established that it reduced to practice an

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embodiment of any one of the claims of Riggins' involved application, Holsten's involved application, or Holsten's patent which corresponds to Count 2 of this interference no later than March 25, 1990, i.e., if Riggins has shown that it constructed an embodiment meeting all the limitations of the interference count and contemporaneously appreciated that that embodiment worked, priority of invention for Count 2 of this interference must be awarded against party Holsten. If Riggins has established that it actually reduced to practice an embodiment of Count 2 no later than March 25, 1990, the question whether Holsten's evidence of conception and/or reduction to practice of the invention of Count 2 is adequately corroborated is moot.

(3) Riggins case for priority

Riggins' Exhibit 22 (RX 22), particularly pages 28, 29 and 31 of Riggins' laboratory "Book No. 1664" of the "Project . . . Nomex Dyeing," and Riggins' Exhibit 26 (RX 26), the handwritten letter from H. Riggins to Ben Triplett, constitute Riggins' primary support for its being first to actually reduce to practice the invention of Count 2. Page 28 of Riggins Exhibit 22 is dated "2/16/90" at its top left and signed and dated "Howell Riggins 2/22/90" at its bottom left. The page was witnessed and dated "Penny E. Haith 5/4/90" at its bottom right. Page 28 reads in pertinent part (RX 22, p. 28):

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Date 2/16/90      Project No. Nomex Dyeing      Book No. 1664  
Product or Process      Evaluation of Process and Products

N,N-dibutylformamide and N,N-dimethylbenzamide to test  
for effectiveness as Nomex dye assistants-

|                   | 1 . . . . | 2 . . . . |           |
|-------------------|-----------|-----------|-----------|
| Wt. Of fabric     | 12.21     | 12.23     | . . . . . |
| dibutylformamide  | 4gm       | . . . . . |           |
| dimethylbenzamide |           | 4gm       |           |
| . . . . .         |           |           |           |
| Acid blue #62     | 2%owf     | 2%owf     |           |

Ran 1<sup>1/2</sup> hrs at 265° F, cooled, dropped baths

#1 very dark blue, complete bath exhaustion  
#2 very pale, uniform blue, light to little  
exhaustion only

Rinsed all in warm water, left to air dry-

#1 Very exciting for understanding in particular -  
seems consistent with growing belief that effective  
carrier must show slight water solubility, otherwise  
poor distribution ratio/effectiveness - solubility  
under use conditions . . . .

|           |       |       |           |
|-----------|-------|-------|-----------|
|           | 13.39 | 12.27 | . . . . . |
| % Addn    | 9.7   | 0.3   | . . . . . |
| . . . . . |       |       |           |

Howell Riggins 2/22/90

Penny E. Haith 5/4/90

Page 29 of Riggins Exhibit 22 is dated "2/20/90" at its top  
left and signed and dated "Howell Riggins 3/22/90" at its bottom  
left. The page was witnessed and dated "Penny E. Haith 5/4/90"  
at its bottom right. Page 29 reads in pertinent part (RX 22):

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Date 2/20/90      Project No. Nomex Dyeing      Book No. 1664  
Evaluation of "Carrier" Candidates  
see p. 28 for procedure

|  | 1                       | 2         | 3     |
|--|-------------------------|-----------|-------|
| Wt. Of fabric  | 10.83                   | 10.64     | 11.53 |
| diethylbenzamide   | 4gm                     |           |       |
| Ninol 11-CM Coconut  |                         | 4gm       |       |
| diethanolamide   |                         |           |       |
| Ninol 201 Oleic  |                         |           |       |
| diethanolamide   |                         |           | 4gm   |
| Acid blue #62(2%owf)X  |                         | X         | X     |
| % exhaust  | 90                      | 10        | 10    |
| Fabric Color   | 80% full(not as deep as |           |       |
|  | dibutylfomamide*        |           |       |
|  |                         | . . . . . |       |
|  | 11.56                   | 10.53     | 11.45 |
| * Color may be typical of soluble vs insoluble -<br>more penetration |                         |           |       |
| % Addn   | 6.7                     | -1.0      | -1.0  |
| Boiling washes   | 11.23                   | 10.62     | 11.53 |

Diethylbenzamide is of particular interest in reference to the results of p. 28 this book in which dimethyl benzamide was relatively ineffective under these same conditions. It is quite unlikely that the solvent properties of these two very similar compounds differ greatly - but it is very likely that solubility in water is much less for the diethyl than for the dimethyl. This pair exhibits this effect, as does the methyl, ethyl and cyclohexylpyrrolidones and perhaps other compounds in this same family. Other effects such as base strength or molecular size may affect dyeing efficiency on Nomex but it seems clear that solubility in water strongly influences efficiency within this family of dyeing aides.

Howell Riggins 3/22/90

Penny E. Haith 5/4/90



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Bi Tech Center, 6008 A High Point Rd, Greensboro, NC 27407 -  
ATTN: H Riggins; and Aldrich Chemical Company, Inc., Invoice  
No. 552954, dated 2/13/90, for shipment of N,N-dimethylbenzamide  
and N,N-dibutylformamide to Burlington Industries Inc., Bi Tech  
Center, 6008 A High Point Rd, Greensboro, NC 27407 - ATTN:  
H Riggins. Each invoice copy is certified by Madeline Klug,  
Screening Specialist, Aldrich Chemical Company, Inc., "to be a  
true and correct copy of the original document" (RX 24; see also  
Affidavit Testimony of Madeleine Klug (RR 38)).

Riggins' Exhibit 26 (RX 26) includes a copy of a handwritten  
letter from H. Riggins to Ben Triplett which appears to be stamp-  
dated twice. From the first stamp date, we can discern the year  
"1990." From the second stamp-date, we can discern the month  
"FEB" and the day "26." The text of the handwritten letter reads  
(RX 26):

To: Ben Triplett  
From: H. Riggins

Subject: Dye Promoters for Nomex

Three additional compounds with carrier or dye promoting  
activity have been identified over the last few months.  
They are -

Halcomid M 8-10, the dimethyl amide of mixed  
8 and 10 carbon acids . . .  
Diethylbenzamide  
Dibutylformaamide

As yet no effort has been made to assess their relative  
efficiency to NOP or CHP - probably none is needed . . . .



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Materials have been ordered for preparation of a family of "carriers" based on current information which should add to our current list of about six.  
Details      NBP      1664-28, 1664-18[.]

With regard to the above-described Riggins' laboratory notebook entries and handwritten letter, Dr. Riggins testified (Affidavit Testimony of Dr. Phillip H. Riggins, page 9-10, para. 24-26 (Record of Party Riggins et al. (Paper No. 98), p. 9-10 (RR 9-10)):

24. Between February 16, 1990, and February 22, 1990, I tested both N,N-dibutylformamide, an aliphatic amide, and N,N-dimethylbenzamide, an aromatic amide having 9 carbon atoms and a swelling value of -0.5%, as potential carriers (Riggins et al. Exhibit 22; Notebook 1664, p. 28). In this testing, I used Nomex<sup>®</sup> T-455 fabric, the Ahiba<sup>®</sup> dyeing equipment, and acid blue dye. Dyeing was conducted at 265°F for 1.5 hours. This testing showed that although use of N,N-dibutylformamide resulted in a deep shade of dyeing, use of N,N-dimethylbenzamide resulted in only light dyeing. Since its number of carbon atoms was close to that of both CHP and N,N-diloutyl [sic] formamide, it appears that the reason N,N-dimethylbenzamide did not function well as a carrier is because its swelling value was too low.

25. Later, between February 20, 1990, and February 26, 1990, I attempted to dye Nomex<sup>®</sup> T-455 fabric with N,N-diethylbenzamide, an aromatic amide having 11 carbon atoms and a swelling value of 3.6%. (Riggins et al. Exhibit 22; Notebook 1664, pp. 29, 31). I again used Nomex<sup>®</sup> T-455 fabric, the Ahiba<sup>®</sup> dyeing apparatus, and acid blue dye, and dyed the fabric at a temperature of 265°F for 1.5 hours. N,N-diethylbenzamide, which has a large swelling value, promoted dyeing of Nomex<sup>®</sup> to a much greater degree than N,N-dimethylbenzamide, because of the latter's smaller swelling value. On page 29 of Notebook 1664, I noted that "molecular size may affect dyeing efficiency on Nomex," thereby explicitly identifying the correlation between the size (or number of carbon atoms) of a carrier and its effectiveness in

promoting dyeing of Nomex® . . . . Impressed by its effectiveness, I again noted the ability of N,N-diethyl benzamide for promoting dyeing of Nomex® on page 31 of Notebook 1664.

26. On February 26 or 27, 1990, I submitted a handwritten letter (Riggins et al. Exhibit 26) to my immediate supervisor, Mr. Triplett, explaining my experimentation with dyeing Nomex® fabric and further explaining that I had identified several agents having dye promoting capability for Nomex® fibers. In this letter, I specifically listed Halcomid M-8-10 (aliphatic amide), N,N-diethylbenzamide (aromatic amide with 11 carbon atoms, 3.6% swelling value), and N,N-dibutylformamide (aliphatic amide with 9 carbon atoms, 1.5% swelling value) as being effective Nomex® dyeing carriers. In addition, I expressed that several other intermediate chemicals for the preparation of other members of the same "family" of amide carriers had been ordered so that further experimentation with dyeing Nomex® could be conducted.

Dr. Hansen testified (Affidavit Testimony of Dr. John H. Hansen, para. 11-12 (Record of Party Riggins et al. (Paper No. 98), p. 17-18 (RR 17-18)):

11. Dr. Riggins . . . tested N,N-dimethylbenzamide an aromatic amide, and N,N-dibutylformamide, an aliphatic amide between February 16, 1990, and February 22, 1990 (Riggins, et al. Exhibit 22; Notebook 1664, p. 18). After reviewing his notebook entries, I recall that the use of N,N-dimethylformamide resulted in a deep shade of dyeing, and that the use of N,N-dimethylbenzamide resulted in only light dyeing because its swelling value was too low.

12. Later, between February 20, 1990, and February 26, 1990, Dr. Riggins attempted to dye Nomex® T-455 fabric with N,N-diethylbenzamide, an aromatic amide that Dr. Riggins determined to have 11 carbon atoms and a swelling value of 3.6%. Riggins et al. Exhibit 22; Notebook 1664, pp. 29, 31). After conducting his testing, Dr. Riggins found that the N,N-diethylbenzamide, which has a large swelling value, promoted dyeing of Nomex® to a much greater degree than N,N-dimethylbenzamide, which has a much smaller value.

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After reviewing his book, I recall that Dr. Riggins had determined that the molecular size (or number of carbon atoms) of a carrier has a very significant affect on dyeing efficiency . . . .

Mr. Triplett testified (Affidavit Testimony of Benny L. Triplett, para. 5-6 (Record of Party Riggins et al. (Paper No. 98), p. 23 (RR 23))):

5. To my knowledge, Dr. Riggins actively developed methods for dyeing Nomex<sup>®</sup> fibers upon returning to Burlington in 1988 through the early portion of 1990. In late February of 1990, I received a handwritten letter from Dr. Riggins (Riggins et al. Exhibit 26) which stated that he had, over the past few months prior to the writing of the letter, identified several agents having dye promoting capability for Nomex<sup>®</sup>. Three of these dye promoting agents (commonly referred to as "carriers") were identified in the letter, namely N,N-dimethylamide, N,N-dimethylformamide and N,N-diethylbenzamide, an aromatic amide. In addition, Dr. Riggins's letter expressed that several other chemicals of the same "family" of carriers had been ordered so that further experimentation with Nomex<sup>®</sup> dyeing could be conducted.

6. Upon reading Dr. Riggins's letter (Riggins et al. Exhibit 26), I decided to forward it to John B. Maier . . . an in-house patent attorney for Burlington. Before having the letter delivered to Mr. Maier, I wrote a brief note across the top of Dr. Riggins letter identifying that Dr. Riggins was continually finding new carriers for dyeing Nomex<sup>®</sup>. I then forwarded the [letter], with my note thereon, to Mr. Maier in late February, 1990.

Mr. Maier testified (Affidavit Testimony of John B. Maier, para. 4-5 (Record of Party Riggins et al. (Paper No. 98), pp. 27-28 (RR 27-28)) (footnote omitted):

4. In the latter portion of February, 1990, I received a handwritten letter (Riggins et al.

Exhibit 26) which Dr. Riggins had written and sent to Benny L. Triplett . . . a senior management employee with Burlington and Dr. Riggins's immediate supervisor, Mr. Triplett had handwritten a brief note at the top of Dr. Riggins's letter before forwarding the letter to me.

5. Dr. Riggins's letter explained that, during the past few months prior to the writing of his letter to Mr. Triplett, he had identified several agents having dye promoting capability for aromatic amide fibers such as Nomex<sup>®</sup> fibers. Three of these dyepromoting agents (which I understand are commonly known as "carriers") were identified in Dr. Riggins's letter (Riggins et al. Exhibit 26), namely N,N-dimethylamide, N,N-diethyl benzamide, and N,N-dimethylformamide. In addition, Dr. Riggins's letter expressed that several other chemicals of the same "family" of carriers had been ordered so that further experimentation could be conducted to find more carriers for dyeing Nomex<sup>®</sup>.

Penny E. Haith testified (Affidavit Testimony of Penny E. Haith, para. 2-5 (Record of Party Riggins et al. (Paper No. 98), pp. 34-35 (RR 34-35)):

2. At Burlington, I worked in a laboratory shared with several Burlington employees including Dr. Phillip H. Riggins . . . . During the years of 1989 to 1990, I was aware of Dr. Riggins's work on the development of dye promoting agents (commonly known as "carriers") for dyeing Nomex<sup>®</sup> fibers. It was my understanding at the time that Nomex<sup>®</sup> fabric was difficult to dye and that carriers were therefore needed to promote penetration of the fibers with dyestuff.

3. During the year of 1990, I signed several pages of Dr. Riggins's Laboratory Notebook No. 1664 to corroborate Dr. Riggins's entries, signatures, and entry dates (Riggins et al. Exhibit 22; Notebook 1664, pp. 28-29, 31, 34-39, 42, and 47-50). . . . .

4. To my knowledge, page number 28 of Notebook 1664 concerns experimentation with several chemicals including N,N-dibutylbenzamide and N,N-dimethyl benzamide. Page 29 of Notebook 1664 describes testing of N,N-diethylbenzamide

and identifies its effectiveness as a carrier. Moreover, page 29 identifies the correlation between both solubility in Nomex<sup>®</sup> of a carrier and its molecular size to its effectiveness in promoting dyeing of Nomex<sup>®</sup>. On page 31 of the 1664 Notebook, Dr. Riggins again noted the effectiveness of N,N-diethylbenzamide. . . . .

5. I have reviewed the copies provided to me by Mr. Risley and declare that on May 4, 1990, I signed and dated notebook page numbers 28-29, 31, 34-39, 42, and 47-50 of Notebook 1664. I further declare that, to the best of my knowledge, each of these notebook copies is a true and accurate copy of the original notebook pages I corroborated with my signature on May 4, 1990.

(4) Findings and Conclusions Re Priority of Invention

The broadest claims to which Count 2 of this interference is directed are method Claim 1 and product Claim 43 of Holsten's involved application, reproduced below (RB, Appendix C, pp. A9 and A14):

1. A method for dyeing fibrous material comprising the steps of:

contacting a fibrous material formed from fibers selected from the group consisting of aromatic polyamide fibers, polybenzimidazole fibers, aromatic polyimide fibers, fibers of copolymers of the monomers thereof, or blends thereof with a dyebath comprising a mixture of a carrier and a dye soluble or dispersed in the dyebath, the carrier comprising an N-substituted aromatic carbonamide or an N,N-disubstituted aromatic carbonamide or mixture thereof; and

heating the fiber while in contact with the dyebath to fix said dye within the fibrous material.

43. A fibrous material formed from fibers selected from the group consisting of aromatic polyamide fibers, polybenzimidazole fibers, aromatic polyimide fibers, fibers of copolymers of the monomers

thereof, or blends thereof which has been dyed with a mixture of a carrier and a dye soluble or dispersed in a dyebath, the carrier comprising an N-substituted aromatic carbonamide or an N,N-disubstituted aromatic carbonamide or mixture thereof.

The evidence of record establishes, and it is undisputed by Holsten, that "Nomex" is a fibrous material formed from fibers of an aromatic polyamide fiber. See findings 14 and 16-20 in Holsten's Opening Brief (HB, pp. 7-11). It being undisputed that "Nomex" is formed from fibers of an aromatic polyamide fiber, we proceed to consider the merits of Riggins' case for priority of the invention of Count 2.

We conclude from the evidence submitted by Riggins that Riggins actually reduced to practice an embodiment meeting all the limitations of the invention defined by Claim 1 or Claim 43 of Holsten's involved application, which correspond to Count 2, no later than February 26, 1990, most certainly no later than March 22, 1990. In particular, we find that Riggins' evidence, especially Riggins' Notebook 1664, page 28 (signed by Howell Riggins on February 26, 1990), page 29 (signed by Howell Riggins on March 22, 1990), and page 31 (signed by Howell Riggins on February 26, 1990 (RX 22)), and the letter from H. Riggins to B. Triplett stamp-dated no later than February 27, 1990, entitled "Dye Promoters for Nomex" (RX 26), show that Riggins (1) contacted Nomex fabric (10.83 grams), a fibrous material

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formed from fibers of an aromatic polyamide fiber, with a dyebath comprising a mixture of N,N-diethyl benzamide (4 gms) and Acid Blue #62 (2%owf) for 1<sup>1/2</sup> hrs at 265° F., cooled and dropped the dyebath from the fabric, and washed and dried Nomex fabric colored "80% full (not as deep as dibutyl formamide)" (RX 22, p. 29) no later than February 26, 1990, most certainly no later than March 22, 1990, and (2) contemporaneously appreciated that the process he recorded on page 29 of Notebook 1664 effectively dyed Nomex fabric.

Having reviewed all the evidence of record, we conclude that Riggins has established by a preponderance of the evidence of record that it actually reduced to practice an embodiment of Count 2, particularly an embodiment defined by Claim 1 or Claim 43 of Holsten's involved application, before the earliest date Holsten has shown that it reduced to practice and/or conceived of the same invention. We determined above that Holsten's evidence can establish conception of the invention of Count 2 no earlier than March 26, 1990, and reduction of an embodiment of Count 2 to practice no later than April 10, 1990. Riggins' evidence, even when considered in a light most favorable to Holsten, establishes that Riggins reduced an embodiment of Count 2 to practice no later than March 22, 1990.

Nevertheless, Holsten argues that (1) Riggins has not shown prior reduction to practice of an embodiment meeting all the limitations of the invention defined by Riggins' involved application and claims thereof corresponding to Count 2, and (2) Riggins cannot establish prior reduction to practice of the invention of Count 2 by showing prior reduction to practice of subject matter which is unpatentable to Riggins. As best we can ascertain from all evidence, Holsten's first argument is supported by substantial evidence of record. Unfortunately for Holsten, however, the law does not require Riggins to establish prior reduction to practice of an invention it claims in order to establish that it first invented subject matter defined by Count 2 of this interference. The law merely requires Riggins to establish that it was first to carry out a process or make a product defined by the interference count and contemporaneously recognized success. Having shown that it had used a process meeting all the limitations of Claim 1 of Holsten's involved application corresponding to Count 2 of this interference to successfully produce a dyed product meeting all the limitations of Claim 43 of Holsten's involved application corresponding to Count 2 of this interference before March 22, 1990, Riggins has shown that it was first to invent the subject matter defined by Count 2 of this interference. Whether or not the subject matter



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of any of Holsten's claims corresponding to Count 2 is patentable to Riggins is immaterial to our holding that Riggins was first to invent the subject matter defined by Count 2. We repeat, the interference count, which forms the basis for determining priority of invention in an interference proceeding, need not be patentable to either party to the interference. "[A] count is a vehicle for contesting priority and may not necessarily be allowable to a winning party or be proper under § 112 (e.g. a phantom count). Hedgewick v. Akers, 497 F.2d 905, 909 n.6, 182 USPQ 167, 169 n.6 (CCPA 1974)." Hunt v. Treppschuh, 523 F.2d at 1389, 187 USPQ at 429.

The "count" . . . is merely the vehicle for contesting priority which . . . effectively circumscribes the interfering subject matter, thereby determining what evidence will be regarded as relevant on the issue of priority. The "count," as distinguished from a party's "claim," need not be patentable to either party . . . .

Squires v. Corbett, 560 F.2d at 433, 194 USPQ at 519.

At this point we will note that an interference is not about who gets a patent. Rather, an interference settles the issue of who does not get a patent. Cf. Cromlish v. D.Y., 57 USPQ2d 1318, 1319 (Bd. Pat. App. & Int. 2000):

Priority is not a basis for granting a patent to that party; rather, it is the basis for denying patentability to another party under 35 U.S.C. 102(g) (1).

Holsten has not argued that the corroborative evidence Riggins has submitted of record in this interference

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insufficiently corroborates Riggins' case for priority of the invention of Count 2. Moreover, we find little, if any, basis for such an argument. We find that Riggins has submitted ample evidence to corroborate its case. Accordingly, priority of the invention defined by Count 2 of this interference is awarded against party Holsten.

C. Riggins' motion to change inventorship

Riggins moved under 37 CFR § 1.634 to correct the inventorship of Riggins involved application (Riggins et al.'s Motion For Correction of Inventorship Under 37 C.F.R. § 1.634 (Paper No. 94)). Riggins' papers in support of the motion reasonably appear to satisfy all the requirements of 37 CFR § 1.48(a). Moreover, Riggins notified Holsten that the motion stands unopposed (Paper No. 112, p. 2):

In that no written opposition was filed by Holsten et al. by the February 4, 1998, deadline established in Paper No. 91, Riggins et al. respectfully assert that the Motion is unopposed and, therefore, should be granted.

Accordingly, it is hereby

ORDERED that Riggins' Motion for Correction of Inventorship under 37 CFR § 1.634 is granted.

D. Miscellaneous papers

Riggins et al.'s Objection Under Rule 1.672(c) to the Admissibility of Holsten et al.'s Exhibits 1-5 (Paper No. 109) is

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noted. Riggins stated its objection to the admissibility of the evidence as follows (Paper No. 109, p. 2, "Statement of the Objection"):

Pursuant to 37 C.F.R. § 1.672(c), Riggins et al. hereby object to "Holsten et al.'s Rule 671(e) Notice of Intent To Rely on Previously Filed Exhibits" in that this notice was not timely filed in accordance with Rules 671(e) and 672(b). Since the notice was not timely filed by Holsten et al., Holsten et al. should not be permitted to rely on Exhibits 1-5 in further proceedings before the Board of Patent Appeals and Interferences.

Not having filed a motion under 37 CFR § 1.635 to suppress this evidence with its opening brief, we presume that Riggins does not now want the Board in rendering its final decision to rule on the admissibility of Holsten's Exhibits 1-5. Moreover, having considered all the evidence of record in this interference, including Holsten's Exhibits 1-5, priority of invention with respect to the subject matter defined by Count 2 has been awarded against party Holsten. Accordingly, the matter is dismissed as essentially moot.

E. Prior decisions on motions

We have considered all matters raised in the parties' briefs for final hearing. Prior decisions on motions and other matters not raised at final hearing have not been reviewed and are hereby adopted as rendered and made final.

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F. Conclusion

It is ORDERED that judgment on priority as to Count 2, the sole count in this interference, is awarded against party JOHN R. HOLSTEN and NIGEL E. NEELEY;

FURTHER ORDERED that, on the record before the Board of Patent Appeals and Interferences, party JOHN R. HOLSTEN and NIGEL E. NEELEY, is not entitled to a patent containing Claims 1-39 (corresponding to Count 2) of U.S. Patent 5,207803, granted May 4, 1993, based on Application 07/589,919, filed September 28, 1990; and

FURTHER ORDERED that, on the record before the Board of Patent Appeals and Interferences, party JOHN R. HOLSTEN and NIGEL E. NEELEY, is not entitled to a patent containing Claims 1, 3-12, 15-19, 23, 24, 26-32, 35-40, 43, 45-49 and 52 (corresponding to Count 2) of U.S. Application 08/025,979, filed March 3, 1993.

FURTHER ORDERED that if there is a settlement and it has not already been filed, attention is directed to 35 U.S.C. § 135(c) and 37 CFR § 1.661; and

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FURTHER ORDERED that a copy of this decision be given an appropriate paper number and entered into the file records of U.S. Patent 5,207,803; U.S. Application 08/025,979; and U.S. Application 08/206,405.

*mgk*

FRED E. McKELVEY )  
Senior Administrative Patent Judge )

*Teddy S. Gron*

TEDDY S. GRON )  
Administrative Patent Judge )

) BOARD OF PATENT  
) APPEALS AND  
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